

Work Order ID 154455

Tuesday, December 13, 2016 8:11:30 AM

154455

Page 1

Item ID: D6103-003 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Round Billet, Aluminum
Start Date: 12/13/2016 Start Qty: 10.00 ***10*** Cust Item ID:
Required Date: 12/28/2016 Req'd Qty: 10.00 ***10*** Customer:

Reference:

Approvals: Process Plan: DAS 13 9-89 Date: DEC 13 2016 Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D6103	Rev B

100

100

Purchasing

Purchasing

PURCHASING

Memo

Issue P/O: 34623 a) Description: Alluminum round billet b)
Ø3.500" x 12.500" long c) Tolerance on all dimensions are +0.030"/-0.000"

d) Material: 7075-T7351 (QQ-A-225/9) Material certification required

0.00

0.00

10DEC 14 2016DAS
13
9-89

110

110

Packaging

Packaging

Receive & Inspect for Damage & Mat'l Certs

0.00

Memo

Ensure material certification is attached

0.03

10x Sp/6-12-20

120

120

QC

Quality Control

QC6- Inspect dimensions to drawing

0.00

Memo

0.00

100DAS
14
9-8916/12/20

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval																																																									
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																									
Root Cause		FAULT CATEGORY																																																															
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER : ☐			
Misidentified ☐	Past Due ☐																																																																

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: <u>MAT043</u>	0.00							
130									
Packaging	Memo	0.02				<u>10</u>			DAS 14 9-89
Packaging	LOCATION: MAT043								<u>16/12/20</u>
140	QC21- Final Inspection - Work Order Release	0.00							
140									
QC	Memo	0.17							DAS 21 9-89
Quality Control									DEC 20 2016

**DEC 20 2016**

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
BAG 8F 20-6								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
OTHER : ☐									

Tuesday, December 13, 2016 8:11:30 AM

Page 1

154455

D6103-003

Required Date: 12/28/2016

Required Qty: 10.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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10

Round Alum Billet

10x Sp/6-12-20

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

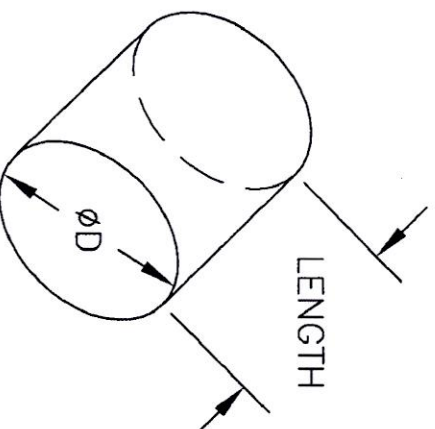
Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																											
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Misidentified ☐	Past Due ☐																																																														

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DESIGN	DRAWN BY	DART AEROSPACE LTD HAMKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO.	Rev. B
DATE		TITLE	SCALE
06.01.31		ROUND BILLET, ALUMINIUM	NTS

RELEASED
06-02-07



DEC 13 2016

DAS
13
9-89

W/O: 154455

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES.

[illegible]



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO34623**

Purchase Order Date 12/14/2016

PO Print Date 12/14/2016

Page Number 2 of 3

Order From :

METAUX CASTLE
P.O. BOX 4090 STN A
TORONTO, ONTARIO M5W OE9
CANADA

VU-MET002

Ship To : DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone

Ship To Contact

Ship To Phone

Ship Via: Yours ppd

Ship Acct:

Buyer

Customer POID

Customer Tax #

Terms

Currency

FOB

Chantal Lavoie

10127-2607

Net 30

USD

Destination-Collect

Line Total: \$316.50

3

D6103-003P

Round Alum Billet

1/5/2017

Yes

1/5/2017

10.00

Each

\$36.30

\$363.00

AS PER DWG D6103 REV. B

B150622

MATERIAL: 7075-T7351 AS PER QQ-A-225/9

SIZE: 3.500" X 12.500" LONG

Line Total: \$363.00

4

D6104-003P

17-4 SS Roundbar 3.25"Od

1/5/2017

Yes

1/5/2017

10.00

Each

\$26.70

\$267.00

AS PER DWG D6104 REV. B

B154456

SIZE: 3.25" X 3.80" LONG

MATERIAL: 17-4 PH AS PER AMS 5643 OR AISI 630

Line Total: \$267.00

Note:

12/14/2016

**Castle Metals®**

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 1 of 2

Shipment No:3153401

Ship From: A. M. CASTLE & CO. 2150 ARGENTIA ROAD MISSISSAUGA, ON L5N 2K7 CAN		Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped 19-DEC-16	F.O.B. ORIGIN	Freight Terms Prepaid		Carrier MANITOULIN		BOL No 3153401-2	

Shipment Details	Final Destination Branch - TOR
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Order No 4600855	Line No 1	Item No 8808.MO	Description 3.5000..RD.7075.T7351.ALUMINUM.CF.144.0000 <u>CUT TO 12.5 IN (+ .1250/- .0000 IN)</u> - BAND SAW CUTTING SPECIFICATIONS: <u>AMS-QQ-A-225/9</u> ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com
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Purchase Order No 34623	Part Number YOUR ITEM NUMBER: D6103-003	Ordered Qty 10.00 PCS	Invoice Qty 10.00 PCS
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Details	ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com END USER: DART AEROSPACE END USE: COMMERCIAL AIRCRAFT PARTS
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Delivery No. 120753770	Mill KAISER ALUMINUM	Heat Number 	Mech Id	PCS 10	Width (IN)	Length (IN)	Shipped Qty(LBS) 121.2537
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These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. Government or as otherwise authorized by U.S. law and regulations.

Date Printed: 19-DEC-2016 01:58:26 PM



Castle Metals®

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 2 of 2

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These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. Government or as otherwise authorized by U.S. law and regulations.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

Date:

Name:

SHIPPED DEC 19 2016

M. Rander



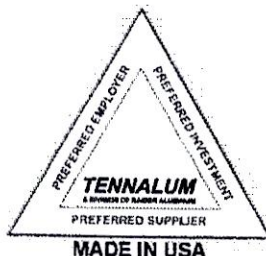
Sp/6-12-20

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Date Printed: 19-DEC-2016 01:58:26 PM

KAISER ALUMINUM FABRICATED PRODUCTS

Tennalum
309 Industrial Drive
Jackson, TN 38301
731-423-2811



CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

CUSTOMER PO NUMBER: 398656-1		CUSTOMER PART NUMBER: 8808		PRODUCT DESCRIPTION: Cold Finished Round	
KAISER ORDER NUMBER: 713468	LINE ITEM: 1	SHIP DATE: 10/10/2016	ALLOY: 7075	TEMPER: T7351	
WEIGHT SHIPPED: 2247 lbs.	QUANTITY: 16 pcs.	B/L NUMBER: 40181	DIAM/DAF/THKNS: 3.500 in.	WIDTH: 0.000 in.	LENGTH: 144.0 in.
SHIP TO: A M Castle & Co 3800 Enterprise Drive Janesville, WI 53546 USA			SOLD TO: A M Castle & Co 1420 Kensington Road Suite 220 Oak Brook, IL 60523 USA		

Test Code: 1000 AC

Actual Physical Properties

Lot Number	LONG. UTS ksi	LONG. YTS ksi	LONG. ELONG. %	COND % IACS
20211689	71.6	60.5	16.5	38.4

Chemical Composition, WT. % (Aluminum Remainder)

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	OTHERS EACH	OTHERS TOTAL	Lot
Actual	0.12	0.24	1.5	0.04	2.8	0.19	5.9	0.03			20211689
Max	0.40	0.50	2.0	0.30	2.9	0.28	6.1	0.20	0.05	0.15	
Min			1.2		2.1	0.18	5.1				

Specifications

Standard: ISO 9001, ASTM B211-12, AMS 4124E, AMS-QQ-A-225/9A Non-Standard: A97075_11_R15

DAS
14
9-89 10/12/20

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ("Kaiser") hereby certifies that the metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms and conditions of sale. Test reports are on file, subject to examination.

John Rennekamp, Quality Manager

John Rennekamp

Plant Serial: 234372

Kaiser Order Number: 713468

Line Item: 1

KAISER ALUMINUM

FABRICATED PRODUCTS

Tennalum
309 Industrial Drive
Jackson, TN 38301
731-423-2811



CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

Miscellaneous Notes

Made in USA

This material was melted and manufactured in the USA. Mercury is not a normal contaminant in aluminum alloys. Neither mercury nor any of its compounds were utilized by Kaiser Aluminum in the manufacture of this material. AS9100C:2009 The recording of false, fictitious or fraudulent statements or entries on the certificate may be punished as a felony under federal law.

This material meets the requirements of (cold finished) T73 temper and QQ-A-225/9E (CANCELLED). NAFTA - YES. Material complies with FAR BAA (FAR 52.225-1, Buy American Act-Supplies), DFARS BAA (DFARS 252.225-7001 Buy American Act & Bal of Payments Prog), and FAR TAA (FAR 52.225-5 Trade Agreements). No weld repair. This material is RoHS 2 - 2011/65/EU compliant.

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ("Kaiser") hereby certifies that the metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms and conditions of sale. Test reports are on file, subject to examination.

John Rennekamp, Quality Manager

Plant Serial: 234372

Kaiser Order Number: 713468

Line Item: 1

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: D6103-003
 DATE: 16/12/20

PO / BATCH NO.: 34623/154455

MATERIAL CERT REC'D: Y
 QUANTITY RECEIVED: 10
 QUANTITY INSPECTED: 10
 QUANTITY REJECTED: _____

THICKNESS ORDERED: 3.500
 THICKNESS RECEIVED: 3.500
 SHEET SIZE ORDERED: _____
 SHEET SIZE RECEIVED: _____

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <u>(N)</u>	
CORRECT FINISH	<u>(Y)</u> N	
CORROSION	Y <u>(N)</u>	
CORRECT GRAIN DIRECTION	<u>(Y)</u> N	
CORRECT MATERIAL	<u>(Y)</u> N	7075-T7351
CORRECT THICKNESS	<u>(Y)</u> N	3.500
PHOTO REQUIRED	Y <u>(N)</u>	
CORRECT MATERIAL	<u>(Y)</u> N	AMS QQ-A-225/9
CORRECT REF # TO LINK CERT	<u>(Y)</u> N	HEAT# 20211689
CORRECT MATERIAL IDENTIFICATION	<u>(Y)</u> N	D6103-003
CORRECT M# ON THE MATERIAL	<u>(Y)</u> N	B154455
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <u>(N)</u>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <u>(N)</u>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>14 9-89</u> DATE: <u>16/12/20</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

MATERIAL RECEIPT INSPECTION FORM

INSTRUCTIONS FOR INSPECTING BAR, TUBING, ROUND, & SHEET STOCK

- 1- VERIFY STOCK TO DART PURCHASE ORDER
- 2- MEASURE ALL DIMENSIONS FOR EACH PURCHASED STOCK
 - a. WIDTH, THICKNESS, DIAMETER, WALL THICKNESS & LENGTH
- 3- VERIFY CONDITION OF MATERIAL i.e. DAMAGED, CORRODED, etc.
- 4- VERIFY THAT SUPPLIER HAS A NUMBER (HEAT #) ON ITS RECEIVING REPORT TO LINK TO MATERIAL CERTS
- 5- VERIFY MATERIAL CERTS ARE CORRECT TO THE DART PO INSTRUCTIONS
- 6- REMOVE / CUT A PIECE OF MATERIAL FOR SAMPLE HARDNESS TESTING

INSTRUCTIONS FOR INSPECTING SKIDTUBE & STEP EXTRUSION

- 1- VERIFY TO DART SUPPLIED DRAWING
 - 2- SAMPLE INSPECT MATERIAL IN BUNDLE TO ENSURE MATERIAL CAN BE RECEIVED INTO DART
 - 3- USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING
 - 4- VERIFY THAT MATERIAL CERTS MATCH TO WHATS CALLED UP ON THE DART DRAWING
- AFTER MATERIAL PASSES INSPECTION**
- 5- HAVE DART EMPLOYEES START STOCKING MATERIAL BUT REQUEST MIN **20pcs** FOR FULL INSPECTION
 - 6- INSPECT ALL DIMS AS PER DRAWING REQUIREMENTS

INSTRUCTIONS FOR INSPECTING CROSS TUBE MATERIAL

- 1- VERIFY MATERIAL CERTS MATCH THE REQUIREMENTS ON THE DART DRAWINGS
- 2- INSPECT MIN. HALF THE BATCH OF EXTRUSION RECEIVED INTO DART
- 3- INSPECT MATERIAL AS PER THE EXTRUSION REPORT
 - a. WALL THICKNESS USING ULTRA-SONIC IN 4 LOCATIONS
 - b. OUTSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - c. INSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - d. STRAIGHTNESS @ CENTER OVER 12" SPAN
 - e. WALL THICKNESS USING TUBE MICROMETER HIGHEST/LOWEST BOTH ENDS
- 4- IDENTIFY EACH TUBE IN SEQUENCE OF INSPECTING (TUBE 1, TUBE2.....) AND W/O# AND PO#
- 5- RECORD ALL FINDINGS ON EXTRUSION REPORT

IF ANY QUESTIONS PLEASE SEE QC COORDINATOR BEFORE GOING FURTHER